STAT

SH&G

May 22, 1984 13155

Central Intelligence Agency New Building Project Office Room 3E40 CIA Headquarters Building Washington, D.C. 20505

STAT

Attention:

Re: SH&G Review of North Side

Electrical Cable Installation

Log 510

Gentlemen:

In response to your letter of May 17, 1984 we have reviewed the drawings and specifications and have the following comments.

Drawing 9-E-3 has a major discrepancy regarding the type of primary cable to be used. Note 9 requires that the new feeder 8B be 500 MCM, 15 KV $\underline{\text{EPR}}$ cable. However, note 7 requires that the new feeder 8A be 500 MCM, 15 KV $\underline{\text{XLP}}$ cable. Both feeder runs are approximately the same length (8A = 1700 LF; 8B = 2100 LF). There appears to be no technical reason for the use of two different cable types.

Specification Section 16401 "Medium Voltage Service Distribution (15KV)", does not contain any technical requirements for the primary cable except that it must conform to WC8-1976 - "EPR Insulated Wire and Cable" when that standard is referenced. There does not appear to be any sentence which references that standard however.

RECOMMENDATION:

Use the original technical specification given to the Agency by SH&G. EPR is the recommended cable type.

If we can assist you further on this matter please advise.

Very truly yours,

Wm. Everett Med ind Project Manager AIA

WEM: jeb

Smith, Hinchman & Grylls Associates, Inc.

455 West Fort Street Detroit, Michigan 48226 313/964-3000 810/221-9463 Telex Architects Engineers Planners A Member of The Smith Group Inc.

Approved For Release 2009/03/20 : CIA-RDP89-00244R000801860001-3 SECTION 16350 DATE : 06/16/83 TIME 18.247 CENTRAL INTELIGENCE AGENCY MEDIUM VOLTAGE CABLE HEADQUARTERS EXPANSION SCHEMATIC DESIGN ARTICLE INDEX 1. GENERAL PROVISIONS 2. SERVICE DATA 31 3. CABLE DATA 4. IDENTIFICATION 60 5. INSTALLATION 102 6. FACTORY TESTING 115 7. MANUFACTURERS

Paul Here is the cable sife.

***END OF INDEX

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Jes Er Solland

Approved For Release 2009/03/20 : CIA-RDP89-00244R000801860001-3

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DATE 06/16/83 TIME 18.247
     CENTRAL INTLULIGENCE AGENCY
                                                                         MEDIUM VOLTAGE CABLE
     HEADQUARTERS EXPANSION-
     SCHEMATIC DESIGN
                                                                         1. GENERAL PROVISIONS
         1)
              GENERAL CONDITIONS
         2)
2
               THE GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, AND THE APPLICABLE PORTIONS OF DIVISION 1, GENERAL REQUIREMENTS ARE A PART OF THIS SECTION.
                                                                              THE APPLICABLE
3
         3)
         4)
              GENERAL
         5)
2
                 THE CABLES SHALL BE MANUFACTURED, TESTED AND INSTALLED IN ACCORDANCE
         6)
3
                 WITH THE LATEST REVISIONS OF:
         7)
                    ICEA PUB. NO. 5-68-516
         8)
                    MEMA PUB. NO. WC8 .
         9)
                    AEIC NO. 6
        10)
                    U.L. 1072 MV90
        11)
                    M.F.P.A. 70, ARTICLE 326
        12)
                 MEDIUM VOLTAGE CABLE SHALL BE U.L. TYPE MV90 FOR USE IN CABLE (""FOR CT USE"").
        13)
        14)
                 THE CABLES SHALL SE CAPABLE OF OPERATING CONTINUOUSLY, WET OR DRY, AT A
        15)
3
                 CONDUCTOR TEMPERATURE NOT IN EXCESS OF 90 DEGREES C. FOR NORMAL
        16)
                 OPERATION, 130 DEGREES C. FOR EMERGENCY OVERLOAD CONDITIONS, AND 250
        -17)
                 DEGREES C. FOR SHORT CIRCUIT CONDITIONS.
        18)
                                                                                2. SERVICE DATA
         19)
              THE CABLE SHALL BE DESIGNED AND CONSTRUCTED FOR USE UNDER THE FOLLOWING
         20)
              CONDITIONS:
         21)
                  13,200 VOLTS (LINE TO LINE)
         22)
         23)
                 3 PHASE
                  3 WIRE
         24)
         25)
3 .
         26)
                  60 HERTZ AC
                  GROUNDED
3
         27)
                  INSULATION LEVEL 133 PERCENT.
         28)
3
                  MIN. INSTALLATION TEMPERATURE O DEGREES C.
         29)
                  CABLE INSTALLED IN UNDERGROUND DUCT, CONDUIT AND OPEN TRAY.
         30)
                                                                                  3. CABLE DATA
         31)
               THE CABLE SHALL BE NEW AND MEET THE FOLLOWING REQUIREMENTS.
         32)
                  NUMBER OF CONDUCTORS
         33)
                                                        . 500 MCM
                  SIZE OF CONDUCTOR
         34)
                                                         F399C3
                  CONDUCTOR MATERIAL
        . 35 )
                                                         BARE OR ANNEALED
                  COPPER COATING
         36)
```

1315

SH&G.

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PAGE

SECTION 16350

	DATE O	d For Release 2009/03/20 : CIA-RDP	89-00244R00080	CENTRAL INTELLIGEN	
7	37)	CONDUCTOR SHIELD	FXTRUNEN	SEMI-CONDUCTING	
	38)	FAMARIAN SHIFE	POLYETHY		
7	39)	INSULATION	ETHYLENE	PROPYLENE RUBBER	
7	40)	INSULATION SHIELD		COPPER TAPE OVER	
	41) 42)		AUXILIAR TAPE DR	Y SEMI-CONDUCTING EXTRUSION	
.7	43)	JACKET	POLYVINY	L CHLORIDE	117
7	44)	CONDUCTOR STRANDING	CONCENTA	IC LAY CLASS B	
: 1	45)			4. IDENT	FICATION .
2	46) 47)	OUTER JACKET SHALL BE DURABLY M. THE ENTIRE LENGTH WITH THE FOLLO			LS ALONG
3	48)	MANUFACTURER'S IDENTIFICATION			*
5	49)	CONDUCTOR SIZE	9		
3	50)	CONDUCTOR MATERIAL	*		
	51)	RATED VOLTAGE			÷ .
	52)	*	E NOT ALLOUED)	*	
		TYPE OF INSULATION (TRADE: NAME	E NOT ALLOWED)		٠.
•	53.)	DATE OF MANUFACTURE			
. 3	56)	THICKNESS OF INSULATION			
, 3	\$5)	TYPE OF INSULATION SHIELD	*		•
. 2	56) 57)	OUTER JACKET IDENTIFICATION SHALL OF JACKET THICKNESS OR APPROVED	L BE BY INDENTION Surface Printing	IG TO MAXIMUM OF 15	PERCENT
2	58) 59)	INSULATION SHIELDING AND SEMI- SEMI-CONDUCTING BY SURFACE PRINTS		KET, SHALL BE IDENT	IFIED AS
. •	60>			S THET	ALLATTON
2	(SPLICES AND TERMINATIONS		74 IN31	ALLATION
. 3	62)	SPLICES SHALL BE AVOIDED WHERE		•	
3					
	63)	NO CABLE SPLICES SHALL BE MADE			
. 3	64) 65) 66)	SPLICES AND TERMINATIONS SH MANUFACTURER'S WRITTEN INSTR RETEMPERED AND REUSED.	RUCTIONS. NO S	IN ACCORDANCE WI EMI-SET COMPOUND	TH THE SHALL BE
3	67) 68) 69)	WHEN A CABLE IS OPENED FOR SPL OR TERMINATING SHALL PROCEED UNTIL COMPLETE, INCLUDING ANY	IMMEDIATELY A	ND CONTINUE UNINT	
. 3	70)	SHIELDING SHALL BE CONTINUED T			
3	. 71.2	GROUNDING CONDUCTORS IN THE			THROUGH
▼, .	72)	SPLICES.			
3	73)	OUTDOOR EXPOSED TERMINATIONS S	SHALL BE EQUIPPE	D WITH RAIN SHIELDS	•
3	74.) 75.)	CONNECTIONS TO INSULATED BUSSE PORTIONS OF BUSWORK LEFT EXPOS			NCLUDING
3	76)	GROUND CONNECTIONS SHALL BE PR	OVIDED FOR CABL	E SHEATHS AND SHIEL	DING.

```
Approved For Release 2009/03/20: CIA-RDP89-00244R000801860001-3 53
                                                            DATE 06/16/83 TIME 18.247
     CENTRAL INT LIGENCE AGENCY
                                                                     MEDIUM VOLTAGE CABLE
                  .EXPANSION™
     HEADQUARTER
     SCHEMATIC DESIGN
2
        77) STRESS CONES
                STRESS CONES SHALL BE PROVIDED FOR SHIELDED CABLE TERMINATIONS.
        78)
                PROCEDURES AND MATERIALS SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF
        791
3
                THE CABLE MANUFACTURER.
        60)
                A COPY OF THE RECOMMENDATIONS SHALL BE FURNISHED TO THE ARCHITECT.
··3
        81)
        82)
                PROVIDE ADEQUATE CROTCH CLEARANCE.
3
                NO BENDS WILL BE ALLOWED IN THE UNSHIELDED **LEAKAGE DISTANCE** LENGTH
        83)
:3
                OF THE CABLE OR IN THE IMMEDIATE AREA OF THE STRESS CONE.
        84)
                CABLE BENDS SHALL COMPLY WITH MINIMUM RADIUS AS RECOMMENDED BY THE CABLE
        85)
3
                MANUFACTURER.
        86)
2
        87)
             PULLING .
                WHERE A PULLING COMPOUND IS REQUIRED, THE COMPOUND SHALL BE UL LISTED
-3
        88)
                 AND COMPATIBLE CHEMICALLY AND PHYSICALLY WITH THE CABLE JACKET
                                                                                 AND THE
        89)
        90)
                DU CT.
                THE CABLE SHALL BE ENERGIZED WITHIN 24 HOURS AFTER BEING INSTALLED.
:3
        91)
                LONG CABLE PULLS SHALL PROVIDED CONTINUOUSLY WITHOUT INTERRUPTION.
        92)
                 USE A STRESS OR STRAIN GAUGE IN PULLING CABLE.
        93)
3
        94)
              FIREPROOFING CABLES
2
                 EXPOSED CABLES IN MANHOLES, VAULTS OR ELECTRICAL EQUIPMENT ROOMS SHALL
        95)
3
        96)
                 BE FIREPROOFED.
                 FIREPROOFING SHALL BE IRVINGTON NO. 7703 ARC AND FIREPROOFING TAPE
        97)
                 HALF-LAPPED AND HELD IN PLACE BY BANDS OF NO. 27 PRESSURE SENSITIVE
        98)
                 GLASS CLOTH TAPE PLACED THELVE INCHES ON CENTERS.
        99)
                    FOR CABLES UNDER 1-1/2 INCHES O.D. USE: 1-1/2 INCH WIDE TAPE.
       100)
                    FOR CABLES GREATER THAN 1-1/2 INCHES O.D. USE 3-INCH WIDE TAPE.
       101)
                                                                        6. FACTORY TESTING
       102)
              THE FOLLOWING FACTORY RESTS SHALL BE PERFORMED:
       103)
3
       104)
                 ON THE SAME PRODUCTION RUN
                    CONDUCTOR RESISTANCE
       105)
                    INSULATION THICKNESS
        106)
                    TENSILE STRENGTH
        107)
                    ACCELERATED WATER ABSORPTION
        108)
                 ON THE MATERIAL TO BE SHIPPED
        109)
                    D.C. VOLTAGE TEST
        110)
                    INSULATION RESISTANCE
        111)
              THREE CERTIFIED COPIES OF THE TESTS SHALL BE RECEIVED BY THE ARCHITECT FOR
 2
        1121
              APPROVAL PRIOR TO SHIPPING.
        113)
              FIELD TESTING IS SPECIFIED IN SECTION 16330, "TESTING".
        114)
```

Approved For Release 2009/03/20 : CIA-RDP89-00244R000801860001-3 MEDIUM VOLTHE CABLE 115) 115) THE CABLE SHALL BE MANUFACTURED BY: 3 . 117) ANACONDA ERICSSON 3 118) COLLYER 3 119) CYPRUS ROME. 120) GENERAL CABLE 3 121) OKONITE PHELPS DODGE CABLE & WIRE

***END OF SECTION

CENTRAL INTELLIGENCE AGENCY

HEADQUARTERS EXPANSION SCHEMATIC DESIGN

SPECIFICATION NO. P13E35

SCOPE: This specification covers single conductor EPR (Ethylene Propylene Rubber) insulated, thermoplastic jacketed power cable for use in aerial, direct burial, conduit, open tray, and underground duct installations. This cable is capable of operating continuously at a conductor temperature not in excess of 90°C for normal operation, 130°C for emergency overload conditions, and 250°C for short circuit conditions, and is rated 15,000 V, 133% insulation level (ungrounded neutral).

STANDARDS: The following standards shall form a part of this specification — IPCEA Pub. No. S-68-516 (NEMA Pub. WC8-1976) "Ethylene Propylene Rubber Insulated Cable and Wire", Underwriters Laboratories Standard 1072 for Medium Voltage Solid Dielectric Cable (MV90), and AEIC No. 6, latest issue.

CONDUCTOR: The conductor shall be Class B compressed soft or annealed copper in accordance with ASTM Specs B3 and B8 and IPCEA, Part 2, Section 2.1 and 2.5.

CONDUCTOR SHIELDING: The conductor shall be shielded with an extruded semi-conducting layer over the conductor, applied in tandem with and firmly bonded to the insulation.

INSULATION: The insulation shall be EPR (Ethylene Propylene Rubber) meeting the requirements of the referenced standards. The average thickness shall be 0.220", and the minimum spot shall be not less than 90% of the average thickness.

SHIELDING: The insulation shall be covered with a helically applied, lapped, printed semi-conducting tape. Over this layer shall be a helically applied, lapped, 0.003" bare copper tape. A suitable binder tape may be applied over the shielding.*

*JACKET: The cable shall be provided with a jacket of black Habirdure (PVC), which is a polyvinyl chloride compound conforming to the requirements specified for polyvinyl chloride jackets in IPCEA. The average thickness shall be in accordance with Table 4-3 of IPCEA, and the minimum spot thickness shall be not less than 80% of the average thickness.

IDENTIFICATION: Cable shall be identified by surface printing of the jacket indicating: Phelps Dodge, size, insulation type, voltage rating, and Underwriters Laboratories designations.

TESTS: Physical and electrical tests shall be conducted in accordance with the requirements of IPCEA No. S-68-516 (NEMA WC8-1976), Underwriters Laboratories Standard 1072 for Medium Voltage Solid Dielectric Cable (MV90), and AEIC No. 6.

*NOTE: For NEC Article 318 Cable Tray applications in sizes 250 and larger, a special binder and jacket will be provided, if necessary.

Cable El Tre Lampar

233/2012/23 233/2013/35

د جهر کا کاک کاک دادهٔ

Cable El Sire Lampany P.O. Box 391, Yonkers, New York 10702 ● (914) 963-8200



Applications

For use in aerial, direct burial, conduit. open tray, and underground duct installations. These cables are capable of operating continuously at a conductor temperature not in excess of 90°C for normal operation, 130°C for emergency overload conditions, and 250°C for short circuit conditions, and are rated at 15.000 V, 133% insulation level (ungrounded neutral).

Standards

Manufactured and tested in accordance with the latest revisions of:

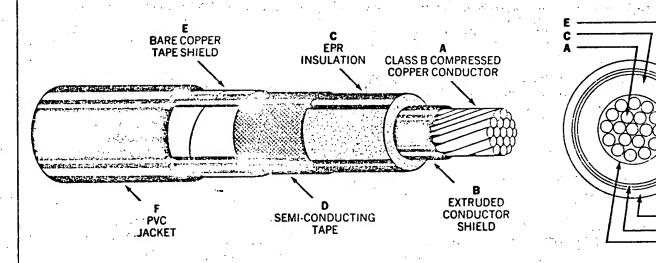
IPCEA Pub. No. S-68-516 NEMA Pub. No. WC8-1976 AEIC No: 6 **UL 1072 MV90**

Features

n

В

- · Flexible, easy bending insulation
- Easy cable preparation
- Easy stripping semi-con layer
- 90°C continuous operating temperature
- 100% shield coverage



AWG or MCM 2+	0.283 0.322 0.362	m.m 7.19	Inch*	mm 19.9	Inch	វាភា	Inch	mm	Lb/M Ft	Kg/Km	Duct	Direct
1 1/0	0.322		0.785	10.0	1				20, 11, 11	UR VIII	- Duci	Burial
7		8 18		13.5	0.080	2.03	0.992	25.2	623	927	155	188
2/0 3/0 4/0	0.406 0.456 0.512	9.19 10.3 11.6 13.0	0.825 0.865 0.910 0.960 1.020	21.0 22.0 23.1 24.4 25.9	0.080 0.080 0.080 0.080 0.080	2.03 2.03 2.03 2.03 2.03 2.03	1.032 1.072 1.117 1.167 1.227	26.2 27.2 28.4 29.6 31.2	695 789 903 1042 1223	1034 1174 1344 1550 1820	176 201 228 260 295	215 244 277 315 358
250 300 350 400	0.558 0.611 0.661 0.706	14.2 15.5 16.8 - 17.9	1.070 1.120 1.170 1.215	27.2 28.4 29.7 30.9	0.080 0.080 0.080 0.080	2.03 2.03 2.03 2.03	1.277 1.327 1.377 1.422	32.4 33.7 35.0 36.1	1368 1557 1744 1927	2036 2317 2595 2867	323 355 387 419	391 430 469 497
500 600 750 1000	0.789 0.866 0.968 1.117	20.0 22.0 24.6 28.4	1.300 1.375 1.480 1.625	33.0 34.9 37.6 41.3	0.080 0.080 0.110 0.110	2.03 2.03 2.79 2.79	1.507 1.582 1.747 1.892	38.3 40.2 44.4 48.1	2291 2648 3278 4179	3409 3940 4878 6218	465 508 565 637	564 612 683 : 771
	300 350 400 500 600 750	300 0.611 350 0.661 400 0.706 500 0.789 600 0.866 750 0.968	300 0.611 15.5 350 0.661 16.8 400 0.706 17.9 500 0.789 20.0 600 0.866 22.0 750 0.968 24.6	300 0.611 15.5 1.120 350 0.661 16.8 1.170 400 0.706 17.9 1.215 500 0.789 20.0 1.300 600 0.866 22.0 1.375 750 0.968 24.6 1.480	300 0.611 15.5 1.120 28.4 350 0.661 16.8 1.170 29.7 400 0.706 17.9 1.215 30.9 500 0.789 20.0 1.300 33.0 600 0.866 22.0 1.375 34.9 750 0.968 24.6 1.480 37.6	300 0.611 15.5 1.120 28.4 0.080 350 0.661 16.8 1.170 29.7 0.080 400 0.706 17.9 1.215 30.9 0.080 500 0.789 20.0 1.300 33.0 0.080 600 0.866 22.0 1.375 34.9 0.080 750 0.968 24.6 1.480 37.6 0.110 000 1.117 28.4 1.625 41.3 0.110	300 0.611 15.5 1.120 28.4 0.080 2.03 350 0.661 16.8 1.170 29.7 0.080 2.03 400 0.706 17.9 1.215 30.9 0.080 2.03 500 0.789 20.0 1.300 33.0 0.080 2.03 600 0.866 22.0 1.375 34.9 0.080 2.03 750 0.968 24.6 1.480 37.6 0.110 2.79 000 1.117 28.4 1.625 41.3 0.110 2.79	300 0.611 15.5 1.120 28.4 0.080 2.03 1.327 350 0.661 16.8 1.170 29.7 0.080 2.03 1.377 400 0.706 17.9 1.215 30.9 0.080 2.03 1.422 500 0.789 20.0 1.300 33.0 0.080 2.03 1.507 600 0.866 22.0 1.375 34.9 0.080 2.03 1.582 750 0.968 24.6 1.480 37.6 0.110 2.79 1.747 000 1.117 28.4 1.625 41.3 0.110 2.79 1.892	300 0.611 15.5 1.120 28.4 0.080 2.03 1.327 33.7 350 0.661 16.8 1.170 29.7 0.080 2.03 1.377 35.0 400 0.706 17.9 1.215 30.9 0.080 2.03 1.422 36.1 500 0.789 20.0 1.300 33.0 0.080 2.03 1.507 38.3 600 0.866 22.0 1.375 34.9 0.080 2.03 1.582 40.2 750 0.968 24.6 1.480 37.6 0.110 2.79 1.747 44.4 000 1.117 28.4 1.625 41.3 0.110 2.79 1.892 48.1	300 0.611 15.5 1.120 28.4 0.080 2.03 1.327 33.7 1557 350 0.661 16.8 1.170 29.7 0.080 2.03 1.377 35.0 1744 400 0.706 17.9 1.215 30.9 0.080 2.03 1.422 36.1 1927 500 0.789 20.0 1.300 33.0 0.080 2.03 1.507 38.3 2291 600 0.866 22.0 1.375 34.9 0.080 2.03 1.582 40.2 2648 750 0.968 24.6 1.480 37.6 0.110 2.79 1.747 44.4 3278 000 1.117 28.4 1.625 41.3 0.110 2.79 1.892 48.1 4179	300 0.611 15.5 1.120 28.4 0.080 2.03 1.327 33.7 1557 2317 350 0.661 16.8 1.170 29.7 0.080 2.03 1.377 35.0 1744 2595 400 0.706 17.9 1.215 30.9 0.080 2.03 1.422 36.1 1927 2867 500 0.789 20.0 1.300 33.0 0.080 2.03 1.507 38.3 2291 3409 600 0.866 22.0 1.375 34.9 0.080 2.03 1.582 40.2 2648 3940 750 0.968 24.6 1.480 37.6 0.110 2.79 1.747 44.4 3278 4878 000 1.117 28.4 1.625 41.3 0.110 2.79 1.892 48.1 4179 6218	300 0.611 15.5 1.120 28.4 0.080 2.03 1.327 33.7 1557 2317 355 350 0.661 16.8 1.170 29.7 0.080 2.03 1.377 35.0 1744 2595 387 400 0.706 17.9 1.215 30.9 0.080 2.03 1.422 36.1 1927 2867 419 500 0.789 20.0 1.300 33.0 0.080 2.03 1.507 38.3 2291 3409 465 600 0.866 22.0 1.375 34.9 0.080 2.03 1.582 40.2 2648 3940 508 750 0.968 24.6 1.480 37.6 0.110 2.79 1.747 44.4 3278 4878 565

Issued 2:78 / Original 🙃

Cyprus Wire & Cable Company Manufacturers of ROME Products

SPEC 7290

July 15, 1977

Supersedos Issue Dated January 1, 1977

ROME-EPR POWER CABLE, 15000 VOLTS

Single Conductor, Shielded, 133% Insulation Level

Type MV-90

APPLICATION:

A—Where NEC jurisdiction applies: as 15,000-volt 133% insulation level shielded power cable. Type MV-90, for use at conductor temperatures not exceeding 90°C in wet or dry locations, when installed in accordance with the National Electrical Code.

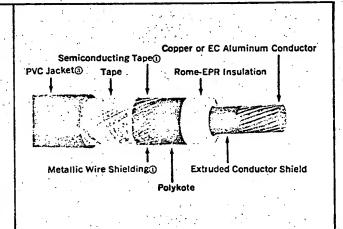
B — Otherwise, for general purpose applications in wet or dry locations, in circuits not exceeding 15,000 volts, phase-to-phase, at conductor temperatures not exceeding 90°C for normal, 130°C for emergency overload, and 250°C for short-circuit conditions. Suitable for installation in conduit, trays, troughs, ducts, aerial, and direct burial applications.

STANDARDS:

A — Listed by Underwriters Laboratories as 15,000-volt power cable, Type MV-90, per UL Standard 1072.

B — Conforms to IPCEA Pub. No. S-68-516 for Ethylene-propylene-rubber-insulated Wire and Cable.

CONSTRUCTION: Annealed copper or Alloy 1350(EC) aluminum conductor, extruded conductor shield, Rome-EPR ethylene-propylene-rubber insulation, PolyKote, semiconducting tape, #22 AWG metallic wire shielding, tape, black polyvinyi chloride jacket overall, surface printed.



Size		Thicknes	s in Mils	Nominal		s	COPI	PER CONDUC	TOR	ALUMI	NUM CONDU	ICTOR	
AWG	No. of Strands				Nom. Diam.	Indicates Stock	Approx. Net	Ampacity*		Anorex, flet	Amp	acity*	
мём .		Insulation	Jacket	Inches	Inches	Item	Wt. Lb./ 1000 Ft.	Duct	Conduit ·	Wr. Lb./ 1009 Ft.	Duct -	Conduit	
	8001-15000 VOLTS, SHIELDED, 133% INSULATION LEVEL (UNGROUNDED NEUTRAL)												
23 1 1/0 2/0	7 19 19 19	220 220 220 220	80 80 80 80	.79 .83 .87 .92	1.07 1.11 1.15 1.20	<u>-</u> - -	640 705 810 900	155 175 200 230	150 170 195 225	475 530 580 615	120 135 155 175	115 130 150 175	
3/0 4/0 250 350	19 19 37 37	220 220 220 220 220	80 80 80 80	.97 1.03 1.08 1.20	1.25 1.30 1.36 1.47	=	1015 1215 1395 1775	260 295 325 390	260 295 330 395	635 760 855 1015	200 230 250 305	200 230 255 310	
500 750 1000	37 61 61	220 220 220	80 110 110	1.32 1.54 1.70	1.60 1.89 2.05	=	2350 3315 4220	465 565 640	480 585 675	1070 1760 2085	370 455 525	385 485 565	

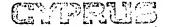
^{*}Duct: Three cables per duct, 90°C Conductor Temperature, 20°C Ambient, One Circuit, 100% Load Factor, Rho = 90. Conductor Temperature, 40°C Ambient, For other installation conditions, refer to Asticle 310-38 of the National Electrical Code.

NOTES: @ Copper metallic tape shield or extruded insulation shield available on request.

® Size 2 AWG is not covered in the UL standard for MV-90 cables at 15 KV 133% IL, so this size cable cannot be UL labeled.

1 Neoprene or Hypaton jacket may also be supplied.

Information on this sheet subject to change without notice.



Cyprus Wire & Cable Company Manufacturers of ROME Products

7290 7-15-77

Specification

Rome-EPR Power Cable, 15000 Volts

Single Conductor, Shielded, 133% Insulation Level

Type MV-90

SCOPE — This specification describes single conductor Rome-EPR (Ethylene propylene-rubber) insulated, shielded power cables for use in ungrounded neutral circuits not exceeding 15,000 volts phase-to-phase at conductor temperatures of 90°C for continuous normal operation, 130°C for emergency overload conditions and 250°C for short-circuit conditions. Cables are intended for use as Type MV-90 in applications covered by the National Electrical Code. Otherwise, they are intended for general purpose power cable applications, in wet or dry tocations, including conduit, cable tray, duct, direct burial, and aerial installation.

STANDARDS—The following standards shall form a part of this specification—Underwriters Laboratories Standard 1072 for Medium-Voltage Solid-Dielectric Cable and IPCEA Pub. No. S-68-516 "Ethylene-propylene-rubber-insulated Wire and Cable."

CONDUCTORS — Class B stranded annealed, coated or uncoated copper or Alloy 1350(EC) aluminum per Paragraphs 2.1 and 2.3 of IPCEA.

CONDUCTOR SHIELDING — Conductors shall be covered with a layer of extruded conducting thermosetting compound with a minimum thickness of .015". The extruded layer shall be firmly bonded to the cable insulation and shall meet the resistivity requirements of Paragraph 2.4 of IPCEA.

INSULATION.—Directly over the conductor shielding shall be applied a homogeneous wall of Rome-EPR insulation. The average thickness of insulation shall be .220". Minimum thickness at any point shall be not less than 90% of the specified thickness. Physical and electrical properties of the insulation shall be in accordance with Paragraph 3.6 of IPCEA.

SHIELDING — A thin uniform layer of Rome "PolyKote" (black conducting polymeric coating) shall be applied directly over the insulation. A semiconducting non-metallic tape shall be wrapped over the "PolyKote" to act as a conductive bedding between the "PolyKote" layer and the metallic shielding. A special marker tape applied over the semiconducting tape shall identify the tape and "PolyKote" layers as conducting.

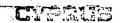
A serving of evenly spaced #22 AWG solid-tinned copper wires shall be applied concentrically over the semiconducting tape. The metallic wire shielding shall meet the requirements of Paragraph 4.1.1.3 of IPCEA.

SEPARATOR TAPE — A suitable separator tape shall be applied over the cable shielding system.

JACKET — A polyvinyl chloride jacket shall be applied overall. This jacket shall meet the requirements of Paragraph 4.4.5 of IRCEA and the Sunlight Resistance requirements of UL Standard 1072. The average thickness of the jacket shall be as specified in Table 4-6 of IRCEA. The minimum thickness at any point shall be not less than 80% of that specified.

IDENTIFICATION — All cable shall be identified by means of surface ink printing indicating manufacturer, size, insulation type, voltage rating, and UL designations.

TESTS — Cable shall be tested in accordance with IPCEA S-68-516 and UL Standard 1072. Certified Test Reports may be furnished, if requested prior to production of the cable.

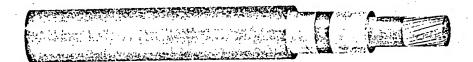


DATA SECTION 5 04

Medium Voltage Power Cable

Uniblend' EP

Shielded Power Cable Type MV-90 Copper Conductor 5000 and 15000 Volts 90C



Description

CONDUCTOR

Annealed bare copper, Anapacto Compact Class B Strand

8 AWG-1000 MCM Sizes:

EXTRUDED STRAND SHIELD (ESS)

Extruded black conducting stress control layer over the conductor. Minimum average thickness not less than 8 mils.

Ethylene propylene (EP) insulation, colored to contrast with the black conducting shield layers.

INSULATION SHIELD

Extruded conducting layer covered by an overlapped annealed copper tape.

Chlorosulfonated polyethylene (CP) or Polyvinyl chloride (PVC).

Specifications

Meets or exceeds the requirements of:

UL 1072 for Medium Voltage Solid Dielectric Cable.

ICEA S-68-516 and AEIC CS6 Standard for EP rubber insulated wire and cable.

AP 15000 Anaconda-Ericsson Product Specification for shielded power cable.

A complete, detailed guide for developing a specification to meet your specific needs is available from your Anaconda-Ericsson Representative.

Application

NATIONAL ELECTRICAL CODE

Ampacities: Article 310-15 Grounding Conductor: Article 250-95 Wiring Methods: Article 300 & 710 Article 300-34 Bending Radius: Article 318 Cable Trays: Article 326 Type MV:

Features and Benefits

Acceptable for use in OSHA regulated installations.

UL listed as Type MV-90 for use in accordance with the National Electrical

Sizes 250 MCM and larger are also listed "For CT Use" in accordance with the National Electrical Code.

Uniblend EP with CP jacket meets IEEE standard 383 qualification requirements for use in nuclear (Class IE) and non nuclear aeneration stations.

Temperature ratings:

Normal Continuous Emergency Short Circuit

Anapact conductor and simultaneous extrusion of strand shield, insulation and insulation shield combine to form a virtually perfect electrode.

EP insulation offers these advantages:

Excellent heat and moisture resistance Outstanding corona resistance Flexibility for easy handling High dielectric strength Low moisture absorption Electrical stability under stress Low dielectric loss Chemicals and radiation resistance

EP insulation is colored for contrast with black conducting layers to simplify cable preparation for more reliable splices and terminations.

CP jacket has excellent low temperature properties - meets ICEA cold bend test requirements down to minus 65C.

How to Order

Order by Anaconda-Ericsson AP number, quantity, size, voltage.

Number of specific lengths required and packaging.

EXAMPLE

Anaconda-Ericsson AP 15105, Uniblend EP.

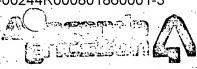
5000 feet, 4/0, single conductor, 5000 Volts.

5-1000 foot lengths on returnable reels.

DATA SECTION 5 05

Medium Voltage Power Cable





Uniblend EP

Shielded Power Cable Type MV-90 Copper Conductor 5000 and 15000 Volts 90C

Size AWG	Number		ductor	insulc Thick		Diam Ov Insuic	er	Jac Thick		Ove		PVC Jo	cket	Veight CP Ja		Size AWG or
or MCM	Strands	Inch		Inch		inch		inch	mm	Inch		Lbs./MFT	kg/km	Lbs./MFT		MCM
5000 V	/olts	4009	% Insi	ulatio	nle	vel	,	:				•	•	·	AP	15105
						0.40:	40.2	.060	1.5	0.63	16.0	260	377	270	391	. 6
6 4	7 7	0.18 0.23	4.6 5.8	.090	2.3 2.3	0.45	11.4	.060	1.5	0.68	17:3	331	479	342	495	. 4
2	. 7	0.23	6.9	.090	2.3	0.48	12.2	.060	1.5		17.8	414	560	425	616	2
1	19	0.30	7.6	.090	2.3	0.51	13.0	.060	1.5	0.74	18.8	470	681	494	715	1
1/0	19	0.34	8.6	.090	2.3	0.55	14.0	.060	1.5	0.78	19.8	. 555	. 804	580	840	1/0
2/0	19	0.34	9.6	.090	2.3	0.59	15.0	.060	1.5	0.82	20.8	657_	951	685	992	2/0
3/0	19			.090	2.3	0.64	16.3	.080	2.0	0.91	23.1	836	1211	856	1240	3/0
4/0	19	0.43		.090	2.3	0.69	17.5	.080	2.0	0.96	24.4	995	1441	1015	1470	4/0
250	37	0.52		.090	2.3	0.74	18.8	.080	2.0	1.01	25.7	1140	1651	1162	1683	250
350	37	0.62		.090	2.3	0.83	21.1	.080	2:0	1,11	28.2	1494	2164	1519	2200	350
500	37	0.74		.090	2.3	0.95	24.4	.080	2.0	1.24	31.5	2015	2918	2058	2980	500
750	61	0.91	23.1	.090	2.3	1.13	28.7	.080	2.0	1,44	36.5	2891	4187	2958	4284	. 750
1000	61	1.06	26.9	.090	2.3	1.13	32.5	.080	2.0	1.60	40.6	3748	5428	3825	5539	1000
	Volts			ulatio				ounde							AP	1531
										. 0 64	21.1	445	662	475	707	
4	7	0.23	5.8	.175	4.4	0.63	16.0	.060	1.5		-	564	817	600	869	
. 2	7 ·	0.27	6.8	.1751		0.65	16.5	.080 .080	2.0 2.0	0.92 0.95	24.2	639	926	676	979	•
	19	0.30	7.6	.175	4.4.	0.69	17.5					730	1057	738	1069	1/0
1/0	19	0.34	8.6	.175	4.4	0.72	18.3	.080	2.0	1.00	25.3	842	1219	884	1280	2/
2/0	19	0.38	9.6	.175	4.4	0.77	19.6	.080	2.0	1.04	26.3 27.7	1003	1453	1027	1487	3/
3/0	19	0.43	10.9	.175	4.4	0.81	20.6						1693	1194	1729	4/
4/0	19	0.48	12.2	.175	4.4	0.87		.080	2.0	1.14	28.9 30.5	1169 1339	1939	1368	1981	250
250	37	0.52	13.2	.175	4.4	0.91	23.1 25.7	.080 .080	2.0 2.0	1.20 1.29	32.7	1696	2456	1726	2500	35
350	37	0.62	15.8	.175	4.4	1.01					36.4	2272	3290	2306	3340	50
500	37	0.74	18.8	.175	4.4	1.13	28.7	.080	2.0 2.0	1.43 1.61	30.4 41.0	3135	4540	3213	4653	75
750 1000	61	0.91	23.1	.175 .175	4.4 4.4		33.1 37.1	.080	2.8	1.83		4116	5961	4225	6119	100
		1.06	26.9					grour							AP	1531
3000	Volts			ulatio				~					024	400	996	
2	7	0.27	5.8	.220	5.6	0.74		.080	2.0	1.01	25.7	646	936 1051	688 769	1114	
1	.19	0.30	6.8	220		0.78	19.8	.080	2.0	1.05	26.7. 27.7	726 841	1218	865	1253	1/
1/0	19 .	0.34	8.6	.2:20	5.6	0.81	20.6	.080	2.0	1.09					1492	. 2/
2/0	19	0.38	9.6	.220	5.6	0.86	21.8	.080	2.0	1.13	28.8	935	1354 1597	1030	1492	. 21
3/0	. 19	0.43	10.9	.220	5.6	0.91	23.1	.080	2.0	1.18	30.1	1103 1252	1813	1806	1891	4/
-4/0	19	0.48	12.2	.220	_5.6	0.96	24.4	.080	2.0	1.24	31.4					25
250	37	0.52	13.2	.220	5.6	1.00	25.4	.080	2.0	1.28	32.4	1423	2061	1452 1872	2103 2711	25 35
350	37	0.62	15.8	.220	5.6	1.10	27.9	.080	2.0	1.40	35.6	1839	2663 3476	1872 2436	2/11 3528	50 50
_500	37	0.74	18.8	.220	5.6	1.22	31.0	.080	2.0	1.53	36.9	2400				
750	61	0.91	23.1	.220		1.39	35.3	.080	2.0	1.71	43.3	3274	4741	3360	4866	75 100
1000	61	1.06	26.9	.220	5.6	1.55	39.4	.110	2.8	1.95	49.5	4310	6242	4426	6410	100

Specified cut lengths are subject to a tolerance of plus 5% minus 0%.

Extruded strand shield thickness: Sizes 6 AWG and 4 AWG .015 inch (.35 mm). Sizes 2 AWG thru 1000 MCM

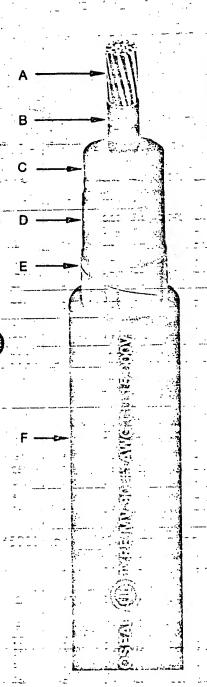
Dimensions and weights shown are nominal, subject to standard industry

MAY 2 8 1982

Okoguard-Okoseal Type MV-90 👊

15kV Shielded Power Cable

One Copper Conductor/90C Rating/100% and 133% Insulation Level



A Conductor— Stranded Copper B Strand Screen— Extruded Semiconducting C Insulation—Okoguard

C Insulation — Okoguard

D Insulation Screen —

Extruded Semiconducting

E Shield - Copper Tape

F Jacket - Okoseal

Insulation

Okoguard® is Okonite's registered trade name for its exclusive ethylene propylene base, thermosetting compound, whose optimum balance of electrical and physical properties is unequalled in other solid dielectrics. The clean red color of Okoguard is the result of an evolutionary development in ethylene propylene rubber compounding to gain greater dependability of the electrical characteristics.

Jacket

The Okoseal * (PVC) jacket supplied with this cable is mechanically rugged and has excellent resistance to oil, acids and most chemicals.

Applications

Okoguard-Shielded-Okoseal 15,000 volt power cables are recommended as feeder circuits in all industrial and commercial installations.

Specifications

Conductor: Uncoated Copper, Class B stranded per ASTM B-8.

Strand Screen: Extruded semiconducting strand screen. Meets or exceeds electrical and physical requirements of ICEA S-68-516, AEIC CS6-79 and UL 1072.

Insulation: Meets or exceeds electrical and physical requirements of ICEA S-68-516, AEIC CS6-79 and UL 1072. Insulation Screen: Extruded semiconducting insulation screen applied di-

rectly over the insulation. Meets or exceeds electrical and physical requirements of ICEA S-68-516, AEIC CS6-79, and UL 1072.

Shield: Uncoated 4 mil copper tape helically applied with minimum overlap of 12.5%.

Jacket: Meets or exceeds electrical and physical requirements of ICEA S-68-516 for polyvinylchloride jackets and UL 1072.

Listed by Underwriters' Laboratories, Inc. as Type MV-90 and meets UL Standard 1072.

A flame retardant construction, size 250 kcmil and larger, for installation in cable tray is available on special order. This construction is UL labeled "Type MV-90 FOR CT USE".

Product Features

- Okoguard cables meet or exceed all recognized industry standards (ICEA, AEIC, NEMA, UL).
- 90C continuous operating temperature
 130C emergency rating
 250C short circuit rating
- Exceptional resistance to moisture, even at 90C.
- Excellent corona resistance
- Small diameter, light weight, flexible
- Easy to splice and terminate
- Flame resistant
- Excellent weathering properties.
- Resistant to most oils, acid and alkalies.
- UL Listed as Type MV-90.

Additional Information

For additional information contact your local Okonite representative or Service Center Manager.

Okoguard-Okose@Type MV-90 (UL)

Froduct Data

Section 2: Sheet 10

15kV Shielded Power Cable

One Copper Conductor/90C Rating/100% and 133% Insulation Level

Okoguard Insulation, 175 Mils (4.45mm), 100% Insulation Level

/		 :	/ : :	Mill	8/	, mils	MIT	nes .		M
	umber	3512	ril or	size o	Starrick	rest tickness	00.15	'c. 00 'W	ight. 103	Ship bs.M. 14. (1
caalog		nductor size	onductor.	Auriber .	Skands Jacker Thick	ness' rils	proto AC	dot OD He	Meidhi, ibel	Shid be the School of
▲ 115-23-3011	2	33.6	7	80	2.03	98	24.89	670	778	150
115-23-3013 115-23-3015	1/0	42.4 53.5	19 19	80 80	2.03 2.03	1.03 1.07	26.16 27.18	760 857	868 965	170 195
▲ 115-23-3017	2/0	67.4	19	.80	2.03	1.12	28.45	975	1083	225
. ▲ 115-23-3021	4/0	104.0	19 37	.80 80	2.03 2.03	1.23 1.27	31.24 32.26	1296 1446	1441 1591	295 330
115-23-3023 ▲ 115-23-3027	250 350	127.0	37	80	2.03		35.56	1859	2004	395
▲ 115-23-3031	. 500	253.0	37	80	2.03	1.53	38.86	2421 3477	2631 3622	480 585
115-23-3035	750	380.0		110 ×	2.7.9÷		45.72		3022	303
Okoguard Insi	ulatior	1, 220 1	ms (5.	oemini					*	
▲ 115-23-3.111	• 2	33.6	7	80	2.03		27.43	764 860	872 968	150 170
115-23-3113	1/0	42.4 . 53.5	19 19	80 80	2.03 2.03	1,13 1,17	28.70 29.72	960	1068	195
▲ 115-23-3117	2/0	67.4	19	80	2.03	1.21	30.73	1081	1226	225
▲ 115-23-3121	4/0	104.0	., 19·	80	2.03	1.34	34.04	1439	1584	295
115-23-3123	250	127.0	37	80	- 2.03	1.39	35:31	1595	1740	330
▲ 115-23-3127	350	177.0	37	80	2.03	1.49	37.85	1990 2563	2200 2773	395 480
▲ 115-23-3131 115-23-3135	750	253.0 380.0	37 61	110	2.03 2.79	1.62 1.91	41.15 48.51	3682	3968	585
110 20 0100	1					<u> </u>				

Minimum Manufacturing Quantity for non-stock items is 5000 ft.

Authorized stock item available from our Customer

Service Centers. Standard Package - #2-4/0-2000 N.R. Reels #250 MCM and -1000' N.R. Reel. Standard package will be furnished where orders do not specify otherwise.

Awg limited to 100% insulation level.

(1) Ampacities in accordance with Table 310-43 (copper conductors) of the 1978 National Electrical Code for three single MV-90 conductors, or single conductors twisted together (triplexed) and installed in isolated conduit in air at an ambient temperature of 40C and a conductor operating temperature

For other ambient temperatures refer to Engineering



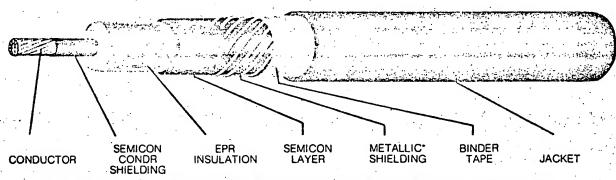
ONITE COMPANY

Ramsey, New Jersey 07446

O Power Cable (shielded)

15000 Volts

N.E.C.-U.L. TYPE MV-90



*May be either metallic tape or a serving of wires. Unless otherwise required a wire shield will be supplied on single conductor cable

Applications

90°C Conductor temperature, wet or dry continuous operation.

Aerial (messenger supported)
Direct burial
Conduits or ducts
Open wiring indoors
Single conductor size 250
kcmil and larger may be
installed in cable tray per Nec
318-2(b) and marked "for CT
use" when specifically
ordered.

Dry locations
Wet locations
Exposure to weather
In presence of many
chemicals and oils
Exposure to ozone

Note: When specifically required by contract or purchase negotiation this cable shall meet AEIC #6 requirements.

U.L. listed as type MV-90, U.L. Standard 1072 for use in accordance with article 310-51 N.E.C. SINGLE CONDUCTOR 15000 VOLTS (133% Insulation Level)

AWG OR kemil SIZE	AMPACITY*	FACTORY TEST VOLTAGE AC DC	STRAND (NO. OF WIRES)	INSUL THICKN. MILS.	JACKET THICKN. MILS.	APPROX. O.D. INCHES	APPROX NET WT. LBS./1000
1	204	33.0kv 80.0kv	19	215	80	1.07	700
1/0	232	33.0kv 80.0kv	19	215	80	1.11	790
2/0	265	33.0kv 80.0kv	19	215	80	1.15	900
3/0	- 302	33.0kv 80.0kv	19	215	80	1.20	1035
4/0	344	33.0kv 80.0kv	19	215	80	1.26	1215
250	378	33.0kv 80.0kv	37	215	80	1.31	1365
350	457	33.0kv 80.0kv	37	215 -	80	1.41	. 1725
500	557	33.0kv 80.0kv	37	215	80	1.54	2270
750	695	33.0kv 80.0kv	61	215	110	1.78	3270
1000	807	33.0kv 80.0kv	61	215	110	1.94	4120

*Ampacity based on three copper cables in duct bank, 20° C ambient, 90° C conductor temperature, 100% load factor. Weights and dimensions are for cables with copper conductors and wire shield.

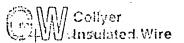
THREE CONDUCTOR 15000 VOLTS (133% Insulation Level)

AWG OR kernil SIZE	AMPACITY**	FACTORY TEST VOLTAGE AC DC	STRAND (NO. OF WIRES)	INSUL. THICKN. MILS.	JACKET THICKN. MILS	APPROX. O.D. INCHES	APPROX. NET WT. LBS./1000
1	171	33.0kv 80.0kv	19	215	110	2.07	2440
1/0	194	33.0kv 80.0kv	19	215	110	2.16	2830
2/0	220	33.0kv 80.0kv	19	215	110	2.25	3150
3/0	250	33.0kv 80.0kv	19	215	110	2.36	3620
4/0	284 ·	33.0kv 80.0kv	19	215	110	2.49	4160
250	311	33.0kv 80.0kv	37	215	110	2.59	4650
350	374	33.0kv 80.0kv	37	215	140	2.86	5910
500	449	33.0kv 80.0kv	37	215	140	3.14	7645
750	545	33.0kv 80.0kv	61	215	140	3.54	10425

**Ampacity based on one copper cable in duct bank, 20°C ambient temperature, and 90°C conductor temperature, 100% load factor.

Weights and dimensions based on cables with copper conductors and tape shields.





Power Cable (shielded)

N.E.C.-U.L. TYPE MV-90

15000 Volts

Specifications

Conductors

- Copper ASTM B-3 **IPCEA-NEMA** U.L. 1072
- Stranding ASTM B-8 or B-496 **IPCEA-NEMA** U.L. 1072
- Aluminum **ASTM B-230 or B-262 IPCEA-NEMA** U.L. 1072
- Stranding ASTM B-231 or B-400 **IPCEA-NEMA** U.L. 1072

Insulation -

Collyer RI-7 IPCEA-S-68-516 NEMA WC-8 U.L. 1072

Jacket

(one of the following) Collyer RS-2 (Neoprene) PS-5 (PVC) RI-10 (Hypalon*) **IPCEA S-68-516 NEMA WC-8** U.L. 1072

Scope

This specification covers single and multi-conductor shielded cables, insulated with Collyer EPR, ethylene propylene rubber, and with a jacket of either neoprene, PVC or Hypalon*. Cables produced under this specification are suitable for 8001-15000 volt operation in conduits, underground ducts, aerially or directly buried at continuous conductor temperatures of 90°C in wet or dry locations. Single conductor size 250kcmil and larger may be installed in cable tray per NEC 318-2(b). Listed by U.L. as type MV-90, U.L. standard 1072.

Components

Conductors: The conductors shall consist of soft copper. meeting the requirements of ASTM Specification B-3 or aluminum meeting ASTM B-230 or B-252. If required, copper conductors may be coated with tin or tin-lead alloy meeting ASTM B-33 or B-189.

The stranding shall meet the requirements of ASTM Specification B-8 or B-496 for copper conductor and B-231 or B-400 for aluminum conductor. Normally Class B compressed strand will be supplied.

Insulation: The insulation shall consist of COLLYER EPR, ethylene propylene rubber, extruded concentrically over the conductor to the wall thicknesses shown in the tables of construction details. It shall meet the requirements of COLLYER specification RI-7, IPCEA-S-68-516, NEMA WC-8 and U.L. 1072.

Shielding: Conductor shielding shall consist of an extruded semi-conducting layer meeting the requirements of IPCEA-S-68-516 par. 2.4. and U.L. 1072.

Insulation shielding shall consist of a semi-conducting tape or extruded compound and a serving of shielding wires or a metallic tape meeting the requirements of IPCEA-NEMA Standard and U.L. 1072. Normally wire shield is supplied on single conductor cable.

Assembly: The assembly of multi-conductor cables shall be done by cabling together the required number of shielded conductors with a suitable left-hand lay, in accordance with IPCEA-NEMA Standard. Sufficient moisture resisting fillers shall be used in the interstices to make the cable round. A binder or tape shall be applied overall.

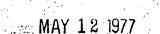
Jacket: Over the shielded conductor or assembly there shall be extruded a jacket of either neoprene. PVC or Hypalon*. The jacket shall be applied to the dimensions shown in the tables of construction details and shall meet the requirements of IPCEA-NEMA Standard, as applicable, one of the following Collyer Specifications: RS-2, PS-5 or RI-10 and U.L. 1072.

Tests

The finished cable shall be tested in accordance with and meet the requirements of IPCEA-NEMA Standard and U.L. 1072. When required by contract or purchase negotiation it shall comply with AEIC No. 6 specification.



Collyer Insulated Wire Approved For Release 2009/03/20 : CIA-RDP89-00244R000801860001-3 _____RI 02865







15,000 Volt Copper Conductor EPR Insulated, Shielded, PVC Jacketed 133% insulation level

CATALOG NO.: 400-2220 FEBRUARY 1977

APPLICATIONS: Primary power and distribution circuits in industrial and commercial installations, power circuits in generating plants where line to ground fault currents are within shield capabilities. May be used in wet or dry locations installed in conduit, duct, open air, aerially or directly buried, in accordance with the standards below.

STANDARDS: Temperature Rating 90°C - Wet and Dry locations

UL Listed Type MV-90 (Direct burial not permitted by UL 1072)

UL Type "CT" (Cable Tray) Label available (for 1975 NEC approved

sizes 250 kcmil and larger)
UL Type "Sunlight Resistant"

Meets IPCEA S-68-516/NEMA WC8

COND	UCTOR			Approx.	Approx.		AMPA	CITYt
Size AWG or kcmil	Stranding No. of Wires	Insulation Thickness Mils	Jacket Thickness Mils	Net Weight Lbs/M Ft	Cable O D Inches	Conduit Size Inches*	Condition A	Condition B
1 1/0 2/0 3/0 4/0 250 350 500	19 19 19 19 19 37 37 37	220 220 220 220 220 220 220 220 220	80 80 80 80 80 80 80	735 829 944 1082 1258 1414 1788 2335	1.09 1.13 1.18 1.23 1.28 1.34 1.45 1.58	3 3½ 3½ 3½ 3½ 4 4 4	170 195 225 260 295 330 395 480	175 200 230 260 295 325 390 465

^{*}For three single conductor cables per conduit, 40% conduit fill (NEC Chapter 9, Tables 1 and 4).

TAMPACITIES ARE BASED ON THE FOLLOWING:

Condition A — Triplexed or three single conductors in isolated conduit in air, 40°C ambient air, 90°C conductor temperature (NEC Table 310-41), short-circuited shields.

Condition B -- Triplexed or three single conductors in underground duct, one circuit, 20°C ambient earth, 90°C conductor temperature, earth thermal resistance (RHO) of 90 and 100% load factor (NEC Table 310-43), short-circuited shields.

Ampacities for other conditions of installation or operation will be supplied upon request.

-The above data are approximate and subject to normal manufacturing tolerances,

Copper (Conductor Extruded 1 Semiconducting Conductor Shield **EPR** Insulation Qual-Strip TM Free Stripping Semiconducting Coating & Tape Shield Uncoated Copper Wire Shield Also available with uncoated copper tape shield. Core Tape PVC Jacket

GÉNERAL CABLE CORPORATION

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POWER CABLE/15,000 Volt Copper Conductor EPR Insulated, Shielded, PVC Jacketed 133% insulation level

ENGINEERING INFORMATION

Conductor Operation Temperature: 90°C continuous normal operation.

Insulation: High quality heat-, moisture-, ozone- and coronaresistant ethylene propylene rubber.

Qual-Strip M Insulation Shield: Semiconducting rubber-filled nylon tape with an underlying semiconducting coating. Tape and coating strip freely from the insulation so that minimal touch-up cleaning is required to ensure a clean insulation surface for splicing or terminating.

Metallic Shield: Concentric serve of spaced uncoated annealed copper wires. Uncoated annealed copper tape shield, helically applied, also available. (UL Listed Type "CT" cable employs copper tape shield).

NOTE: UL and IPCEA wire shielding comprising 5000 circular mils of copper per inch of calculated core diameter, has limited fault current capability and may not be adequate unless special measures are taken to limit the magnitude of line to ground fault currents. Where the adequacy of this type shield is in question, engineering assistance is available for the design of an adequate shield for intended application.

Jacket: Tough, ozone-, heat-, and moisture-resistant PVC (polyvinyl chloride) jacket which provides protection against sunlight, oils, and most acids and alkalies.

Minimum Recommended Installation Temperature: 14° (-10°C).

SPECIFICATIONS

Conductor: Uncoated or coated annealed Class B stranded copper per UL 1072, Paragraphs 4 thru 12 and IPCEA S-68-516/NEMA WC8, Part 2.

Conductor Shield: Extruded semiconducting thermosetting compound per UL 1072, Paragraphs 13 thru 14 and IPCEA S-68-516/NEMA WC8 Part 2.

Insulation: Extruded thermosetting ethylene propylene rubber per UL 1072, Paragraphs 22 thru 22F and IPCEA S-68-516/NEMA WC8, Paragraph 3.6.

Insulation Shield: Qual-StripTM free stripping semiconducting coating with overlying semiconducting tape per UL 1072 Paragraphs 24 thru 24B and IPCEA S-68-516/NEMA WC8, Paragraph 4.1.1.

Metallic Shield: No. 24 or 22 AWG uncoated annealed copper wires per UL 1072, Paragraphs 25 thru 25B and IPCEA S-68-516/NEMA WC8 Paragraph 4.1.1.3. Uncoated annealed copper tape shield, helically applied, per Paragraph 4.1.1.1 also available. (UL Listed Type "CT" cable employs copper tape shield).

Jacket: Black PVC per UL 1072, Paragraphs 40 thru 43 and IPCEA S-68-516/NEMA-WC8, Paragraph 4.4.5. PVC jackets marked "Sunlight Resistant" comply with UL 1072 Paragraph 70A.

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Analysis Matrix (

MEDIUM VOLTAGE CABLE SELECTION

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		Cokona Criteria	HIGH TEMP	INSTALLATION		PHYSICAL CAPACITY	4	INITIAL STRENGTH	U /
	Weight of	a	b	С	d	е	f	g	Total
	Importance (0-10)	4	4	. 6	· 8	6	10		
1.	RUBBER (EPR)	5/20	5/20	5/30	5/40	3/18	5/s		178
	CROSS LINKED POLYETHYLENE (XLP)	3/12	4/16	2/12	5/40	5/30	5/50		160
3.									
4.									
5.									
6.	*								
, 7.									y.
8.									
9.									
10.									

Excellent - 5 Very Good - 4 Good - 3 Fair - 2 Poor - 1

^{*} BASED ON TEEE REPORT "A COMPARISON OF M.V. CARLE INSULATIONS",
ROBERT S. SINATRA, IA-8, NO 5 SEPT/OCT '72